Adoption and impact of sustainable intensification practices in Ghana

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Key messages

- Most SIPs are complementary to each other and hence it would be useful to promote them as a package.
- The impact on maize productivity would be the highest when commercial inputs are used in combination with cultural practices.
- Multiple factors would explain the adoption of SIPs which include accesses to market, credit, and information as well as resource endowments, household demography and land characteristics
- Using multiple knowledge sharing strategies instead of the conventional singular formal approach would enhance adoption

Objectives and approach

The study examines the adoption and impact of sustainable intensification practices (SIPs) on productivity and income using a dataset from three regions of Ghana . Six SIPs were considered in our analysis including commercial input (chemical fertilizer and improved seeds) and good agricultural practices (inter-cropping, crop rotation, organic fertilisers, soil and water conservation practices). A multivariate probit (MVP) model was estimated to assess the adoption of multiple SIPs. Moreover, we used a multivalued semi-parametric treatment effect model (MVTE) to estimate the effects of adopting multiple SIPs on maize productivity.

Key results

Farmers apply multiple SIPs in most of the cases. About two SIPs are applied on a typical plot constituting commercial inputs, good agricultural practices, or both (Figure 1). The MVP model results show, among others, that access to market, capital, and information/knowledge would enhance the adoption of SIPs. The MVTE model results show that higher number of SIPs are associated with higher productivity which is more visible when commercial inputs are used in combination with cultural practices (Figure 2 &3).

Significance and scaling potential

Sustainable agricultural intensification entails the adoption of modern technologies and cultural practices in an integrated manner. This study provides a supporting evidence that integrating SIPs in maize production would increase grain yield and income. For instance, integrating commercial inputs and cultural practices would increase yield by about 68%. This would reduce food insecurity and poverty among smallholder farmers which is in line with Africa RISING project objective and FtF goals.

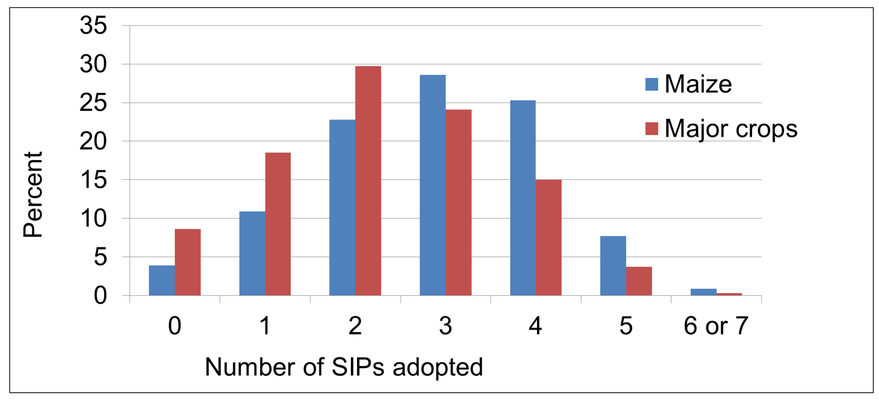

Figure 1: Adoption SIPs in Ghana

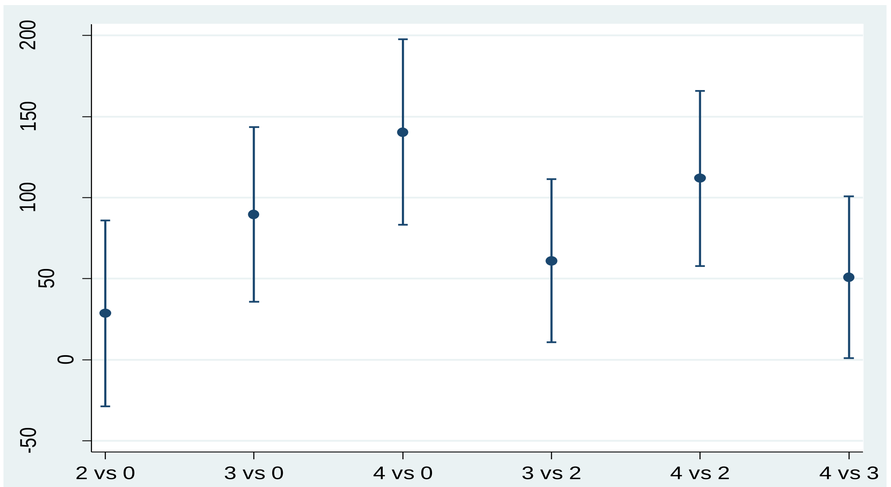

Figure 2: Effect of SIPs on maize productivity, mean level

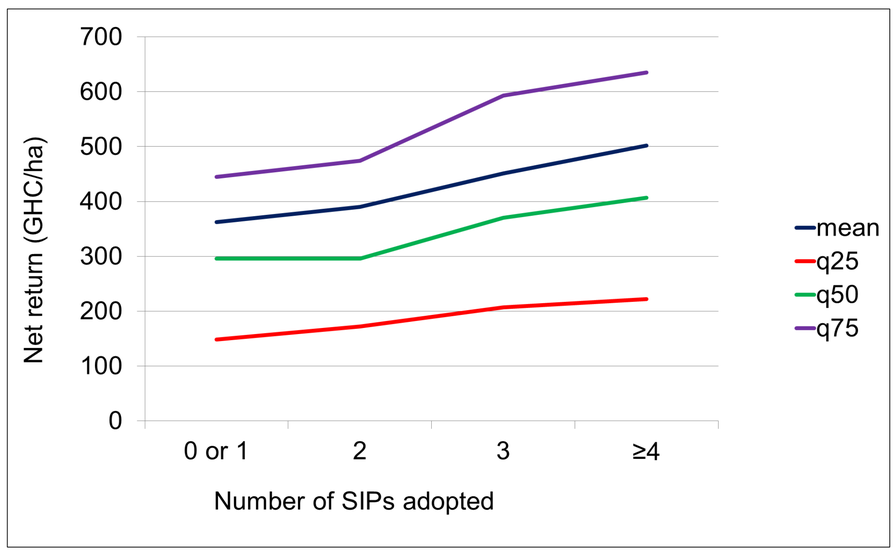

Figure 3: Effect of SIPs on maize productivity, mean level

Partners

We thank farmers and local partners in Africa RISING sites for their contributions to this research. We also acknowledge the support of all donors which globally support the work of the CGIAR centers and their partners through their contributions to the CGIAR system